Technology for

Alaskan Transportation

Summer 1989 - Volume 12
Alaska Transportation Technology Transfer Program

In This Issue

Clarification

In our spring issue, the article "Selecting a Consulting Engineer" stated that the regional offices of the Alaska Department of Transportation and Public Facilities can help users in preparing requests for proposals (RFPs). This should not be misinterpreted to mean that DOT&PF competes with private consultants for engineering services.

This newsletter is funded by a grant from the Federal Highway Administration.

In Search of User Costs

Whenever the total cost of providing a highway network is analyzed, the topic of user costs comes up. Most agencies find that the estimates of user costs vary so widely that it is difficult to defend any estimate. For example, one study in 1980 indicated that 95% of transportation costs are borne by the user while 5% are borne by the highway agency. Another stated that the user costs were minimal.

Why is it so difficult to develop these costs for inclusion in planning? The problem is in the definition of user costs. Ultimately, the public bears the entire cost of transportation through taxes, vehicle operating costs, time, and accidents. Some studies extract the capital costs of the highway facility and consider the remainder as the user cost. Other studies consider the costs of increased delays, operating costs and accidents. Some studies are developed for high volume urban facilities while others are developed for low volume rural roads.

In this discussion, user costs are defined as vehicle operating costs, time, and accidents. Vehicle operating costs are comprised of fixed and variable costs. Fixed costs are those which occur whether or not the vehicle is used and including insurance, depreciation, and other ownership costs. These costs are not normally influenced by the quality of the roadway to any large extent. Operating costs such as fuel, oil, tires, shocks, etc. are influenced by the distance driven, quality of the roadway surface, and delays.

(continued on page 2)

Work Zone Safety

Have you ever been frustrated by having to wait at a road construction site for a pilot car or for heavy equipment to clear the road? The good news for Alaskans is that we are free of this inconvenience for about six months of the year. The bad news is that almost all of our road construction is concentrated during the summer and early fall months.

The work zone is an abnormal highway environment. Motorists accustomed to a clear, unobstructed roadway are required to recognize and obey an array of instructions. These are conveyed by a wide variety of traffic control devices and, in some instances, human flaggers. The adjacent roadside, usually free of fixed objects, is occupied by warning devices, protective barriers, equipment, and workers.

Highway work zones are often dynamic in nature. As work progresses through its various stages traffic may be diverted over different portions of the roadway or over different roadways. In many instances, the original roadway capacity is physically reduced by one or more lanes. Since the public must travel close to the work activity, this tends to reduce driving speeds. This results in increased delay and added frustration for the motorist.

Work zones can be very dangerous places. National fatalities occurring in work zones rose from 489 in 1982 to 702 in 1989. Seventy-three percent of these fatalities occurred in construction zones involving major work activities such as pavement repair or reconstruction, bridge construction or rehabilitation, or guardrail replacement. Fifty percent of the fatalities occurred in the darkness. Despite these sobering statistics, Alaskans are fortunate since our construction season is during long summer days.

Nationally, concern for drivers', pedestrians', and workers' safety has led to sweeping revisions in the Federal

(continued on page 2)

User Costs
(continued from page 1)

Delays occur for a number of reasons including congestion, traffic control devices, construction, maintenance, accidents, and even roughness. Delays result in lost productivity, increased fuel usage, increased pollution, and an increased number of accidents. The cost to the business community of lost time and productivity can be readily estimated. However, it is difficult to determine these costs for people on personal errands or for tourists. What is their time worth?

The cost of increased fuel usage is readily determined. However, the cost of the resulting increased pollution is much more difficult to quantify. Factors which affect these costs include concentration, health hazards, air movement, etc. The number of variables dictates that environmental costs must be determined for each project.

While statistics are not kept, excessive delays cause a number of accidents. Most drivers, if delayed long enough, will become frustrated and take a chance. This increases the probability of an accident.

The roadway condition affects the accident rates and operating costs as well. Roughness, rutting, and skid resistance are often contributing factors for accidents. For example, avoidance of potholes is a common cause of accidents since the driver is concerned with the vehicle damage caused by hitting the pothole. Studies in Sweden and Norway have repeatedly shown that roughness and driver fatigue are related. These studies have also shown that tired drivers are more susceptible to accidents.

There are several user cost models available such as the World Bank and the Brazilian models. When used properly, these models can be invaluable in the decision making process. However, the analyst must develop a thorough understanding of the assumptions and conditions for which the model was developed to ensure the model is appropriate.

It must be remembered that the highway network has been developed for the user and that the needs and desires of the user must be met. However, if these needs cannot be met due to financial constraints, the user must be informed about the impact on user costs. Too often, highway budgets are defended by listing what work will not be accomplished unless there is full funding or how they will affect the highway agency and not on how they will affect the user. User costs must become an integral part of the budgeting process. After all, it is the public who pays for and uses the highway system.

This article was written by Billy Conner, P.E., Statewide Research Manger for the State of Alaska, Department of Transportation and Public Facilities.

News & Views

T2's Own Mrs. Alaska

Congratulations to Michelle Johnson, our capable administrative assistant at the Alaska Transportation Technology Transfer Program, who was named Mrs. Alaska in April. Michelle is the person who usually answers your telephone call requesting publications and videos, makes course arrangements for our short courses, and performs numerous other tasks for our program. So please join me in wishing Michelle well as she prepares to participate in the nationally televised Mrs. America Pageant. Best wishes and good luck Michelle!

Safety and Vehicle Color

A U.S. Post Office study of vehicle color combinations determined that light colored vehicles can be seen two to four times farther away than dark colored vehicles in foggy or twilight conditions. The major consideration for the base or background color is the amount of light reflected.

However, with the lengthy snow season in Alaska, a combination of colors is recommended to give both high reflection and contrast against snow. The combination with the greatest visibility is black on a yellow background. The next greatest visibility is black on a white background, and then yellow on a black background. If you do lettering on your vehicles, you will further increase the overall visibility if you choose a color with high contrast to the rest of the vehicle.

If you should opt for the combinations involving black, stripes are recommended. However, since the top section of the vehicle is seen more frequently against a dark sky rather than snowbanks, the stripes need only cover the lower third of the vehicle. They should be between six and twelve inches wide.

The stripes should run at a 45 degree angle so that they are less likely to be confused with roadside objects. Diagonal stripes are an accepted warning indication, providing further warning to other drivers.

Adapted from Kansas TRANS Reporter, January 1989.

Work Zone Safety
(continued from page 1)

Highway Administration (FHWA) regulations of traffic safety in work zones. Traffic engineers are now required to plan what the traffic pattern will be and how it will be handled for each stage of every federally funded contract, which includes most road construction projects.

The Traffic Control Plan (TCP) is a plan for handling traffic through a project. The TCP also sets forth basic principles and standards for design, application, installation, and maintenance of all types of traffic control devices.

These devices are the key elements to maintaining smooth traffic flow, so they must be in the best possible condition. Devices for nighttime operation must

(continued on page 3)

Maintaining Gravel Roads

Did you know that a gravel road can revert to its original level of roughness just 20 days after blading? Blading frequency can vary from twice a year to once every seven days, depending upon traffic and local resources. Here are some tips on minimizing maintenance.

* Work gravel surfaces when moist or after rain.
* Most washouts occur because of improper drainage.
* Avoid a double ditch. Leaving a farrow in the traveled way will keep water on the road. Smooth the surface to the ditch line. Grade from the outside to the center.
* Layers of gravel should be at least twice the thickness of the largest stone size. If you put on a 6-inch gravel course, the largest stone should be 3 inches.
* A key to maintaining problem washboard areas and achieving a tight, strong surface is to use high-quality crushed gravel. Also check soil quality in the base as well as the need for underdrainage.
* In mud season use quality gravel instead of sand to correct problem wet areas.
* Rather than disturb the entire roadway to correct occasional potholes on an otherwise sound gravel surface, patch them with a 50/50 mixture of crushed gravel and calcium chloride, sprinkle with water and tamp.
* Establish a schedule for periodic inspection and resurfacing of all gravel roads.

Adapted from the Kentucky Transportation Center newsletter and Road Business, University of New Hampshire T2 Center, Spring 1988.

LOST GRAVEL: A COSTLY ALASKAN PROBLEM

Question: How can you save $100,000 per motor grader operation per year?

Answer: Train your operators to properly pick up windrows of gravel.

Some do-it-yourself coffee can research by Ed Wootton, of Nebraska's T2 Center, led to this conclusion.

As he watched motor grader operators at work, Ed wondered about the cost of the gravel lost off the toe of moldboards as windrows were picked up.

So he measured one foot in the ditch and put all the spilled gravel he found in that area into a coffee can. When he weighed the can he found he had two pounds of gravel (which he says is a very minimal loss--often it is much more).

At that rate, the gravel loss is 10,560 pounds in one mile. If an operator grades 20 miles a day, he loses 105.5 tons. At $7.50 per ton, the dollar loss is $791.25 per day.

If the operator works 22 days per month and is on the road half of his time during the year, the total dollar amount of lost gravel is $104,445.

The main cause of this loss, Ed says, is improper blade angle. "We know there are other factors in the loss, such as wind, water, and heavy traffic, but the chief cause is improper procedures."

The spilled gravel is partially retrievable by pulling up the slopes, but that is time-consuming and costly, and "you don't get it all."

Here's Ed's formula if you want to measure your own losses on the many miles of Alaskan gravel roads:

* Weigh gravel collected from one foot of ditch.
* X 5,280 (feet per mile).
* divide by 2,000 (lbs per ton)
* X number of miles per day per machine.
* X number of days worked per year.
* X number of machines used.
* X cost per ton of gravel

From "Vermont Local Roads News," Saint Michael's College, September, 1988.

We Have A Winner!

Todd Sherman, DOT&PF Drafter, is the winner for the T2 logo contest with the design you see below. It will be used on all future issues of our newsletter as well as on our stationery and office materials. Thanks Todd.

ALASKA TRANSPORTATION TECHNOLOGY TRANSFER

Work Zones Safety
(continued from page 2)

be reflectorized and illuminated as necessary. In the work zone, the locations of devices should be clearly marked to help in their installation.

Traffic control devices must be maintained over the course of the project. All workers should be supplied with information on the planned locations of devices and understand how to install and maintain them. Flaggers should be used only under conditions that cannot be adequately handled by the use of traffic control devices, or other means.

The FHWA mandated that all persons responsible for the development, design, implementation, and inspection of traffic control should be adequately trained. This regulation requires agencies to provide training for their personnel in construction and maintenance departments. Legal advisors strongly advocate traffic control training due to the potential liability of an injury.

The Alaska T2 Program has scheduled a two-day course titled "Work Zone Traffic Control Devices" to be given in Fairbanks, August 16th and 17th and in Anchorage, August 23rd and 24th. Dr. Eugene Wilson, a nationally recognized authority on work zone safety, will be the course instructor. A flyer giving course details and registration information will be distributed in July 1989. For further information, contact Michelle Johnson at (907)474-7733. Hope to see you at one of these courses.

Adapted from Work Zone Safety in Tech Transfer, University of California-Berkeley, January 1984 and El Puente, University of Puerto Rico, Summer-Fall 1988.

Technology for Alaskan Transportation is a quarterly newsletter that informs local transportation people in government and industry of useful publications and services. The newsletter reports on practical information, new technology, and learning opportunities such as workshops, seminars and videotapes. To get on our mailing list, to receive any of our services, or to contribute to the newsletter, contact:

Transportation Technology Transfer Program
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About Our Program

The goal of the Alaska Transportation Technology Transfer Program is to help transportation agencies obtain useful information and training related to transportation needs. The program focuses on technology related to roads, bridges and public transportation. In addition to our newsletter, we provide low-cost seminars and workshops, provide copies of useful technical reports and videos upon request, and answer phone and mail inquiries related to transportation technology. If we don't have the answer, we will refer the question to a suitable specialist.

The Alaska Transportation Technology Transfer Program is administered by the Alaska Department of Transportation and Public Facilities with contract services provided by the University of Alaska Fairbanks, Institute of Northen Engineering. This program is funded by the Federal Highway Administration and the Alaska Department of Transportation and Public Facilities (DOT&PF).

The following people are involved in the program.

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Calendar of Events

We will be happy to include any relevant event you would like to publicize. For more information about events in Alaska, call Michael D. Travis at (907)474-2482, Larry Johnson at (907)474-7637, or Michelle Johnson at (907)474-7733.

1989

July 10-14: Fifth World Conference on Transport Research: Yokohama, Japan. Write Professor Yukihide Ikano, Chairman of Scientific Committee, WCTR, c/o Association for Planning and Transportation Studies, 5th Floor, Language Service Building, Kioicho 3-33, Chiysodaky, Tokyo 102, Japan.

July 12-14: Course 201, Communications in Real Estate Acquisition. Sponsored by the Arctic Trails Chapter 71, International Right-of-Way Association. Contact Paul Costello at (907)457-7033.

July 15: Course 213, Conflict Management. Sponsored by the Arctic Trails Chapter 71, International Right-of-Way Association. Contact Paul Costello at (907)457-7033.

July 24: How to Comply with Hazardous Work Management Regulations. Anchorage, Alaska. Presented by the Environmental Resource Center, Feyetteville, North Carolina. Contact Maryel Tomter at (919)822-1172.

* **August 7-8: Right-of-Way Forum.** University of Alaska Fairbanks. Contact Michelle Johnson at (907)474-7733.

* **August 16-17: Work Zone Traffic Control Devices.** Captain Cook Hotel, Fairbanks, AK. Contact Michelle Johnson at (907)474-7733.

* **August 23-24: Work Zone Traffic Control Devices.** UAF Woodcenter Ballroom, Anchorage, AK. Contact Michelle Johnson at (907)474-7733.

September 21: Course 214, Skills of Expert Testimony. Contact John F. Bennett, PLS, Coordinator at (907)474-2413

September 22: Region 7 Fall Forum. Contact Jane Brownfield, Forum Coordinator at (907)451-2522.

September 24-26: Instructor's Clinic. Contact Sharon McLeod Everette, SR/WA, at (907)474-2414.

October 30-31: National Seminar on Aspalt Rubber. Contact Allis Plaza Hotel, 200 W. 12th Street, Kansas City, Missouri.

December 2: Course 402, Income Approach to ROW. Contact Sig Strandberg, Coordinator, at (907)474-2467.

* **December (date to be announced): Transportation Software.** Contact Michelle Johnson at (907)474-7733.

* **T2 Short Courses**

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address correction requested

Number13, 1989

The topic of seal coats arouses different responses from different municipalities. Many have used them for years and swear by them while others would not use them if they were free. Because seal coats can stretch dwindling municipal funds, this narrative will focus on the benefits and pitfalls of seal coats.

There are two main reasons why people are dissatisfied with seal coat performance. First, people often expect too much from them. The purpose of a seal coat is simply what the name implies: it seals the surface of your pavement, repelling water. Water contributes to pavement distress.

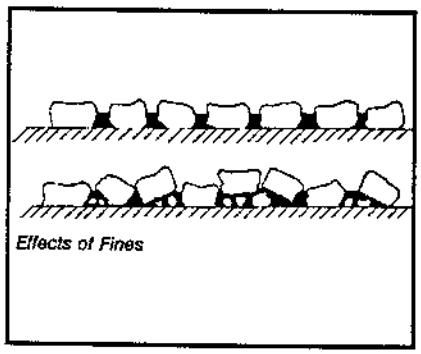
Seal coats add skid resistance to worn pavement. Pavement surfaces can be restored, giving new life to a rapidly deteriorating surface. Seal coats should be used only on low-volume roads. Seal coating heavily used streets invites problems. Seal coats do not add structural strength to pavements. If it's too weak to pave, it's too weak to seal. A poor surface with depressions indicates water problems which must be solved with improved drainage. Sealing such a surface probably will not hold the pavement together. In fact, the cracks will reopen, wasting the money spent on seal coats. In such cases, first solve the drainage problems, then consider seal coating.

The second reason for dissatisfaction is that the seal coating was poorly done. Seal coating is a tricky business. If small problems are overlooked, big problems result.

Always consider the components of a seal coat. Seal coats are a mixture of water, asphalt, and an emulsifying agent. The emulsifying agent causes the asphalt to disperse in the water. This stabilizes the mixture for mixing, pumping, and prolonged storage. The alternative to an emulsifying agent is a cutback, which uses kerosene or naphtha to disperse the asphalt cement. However, kerosene and naphtha have been deemed harmful to the environment.

Care must be taken to choose the proper combination of aggregate and emulsion. The emulsion supplier can do a simple test to assure the materials are compatible. The supplier provides a letter stating that the test showed proper material compatibility.

Although most people know that concrete goes through a "setting-up" process, many don't know that emulsions also have a setting-up process called "breaking". The asphalt separates from the water and forms a continuous film on the pavement. Aggregates must be placed and the first roller pass accomplished before the emulsion breaks or the stone will not adhere properly.



Effects of Fines

A high percentage of fines in the aggregate causes another problem: the fine material will absorb the emulsion. If the aggregate particles are dusty or coated with clay, the emulsified asphalt may not stick. The dust produces a film that prevents the asphalt from adhering to the aggregate. This problem can be solved by using a precoated aggregate or a washed aggregate. Using damp chips can also improve the product. The aggregate should be as close to one size as possible. Generally, the largest particle should be no larger than twice the size of the smallest particle.

Preparation

Now that we understand the materials and have checked their compatibility, we are ready to start the seal coating process. First, clean out the surface cracks and seal them. Clean the grass and weeds from the gutter and curb areas. Power broom the street a week or so before paving, if possible, and either hope for rain or have your fire company flush the road. Power brooming immediately before placing a seal coat will result in a thin film of dust on the surface of the pavement. This dust can cause severe problems.

Make sure you have an adequate supply of emulsion and aggregate to complete the job. Running out of aggregate when you have several hundred feet of paving covered with a rapidly breaking emulsion can ruin your day.

Application

After you have placed proper signs, cones, barricades, etc., drive through the work zone and make adjustments as needed. If the temperature of the air, road surface, and the aggregate are above 50 degrees Fahrenheit and rising, you're ready to start (emulsions cease to cure at 40 degrees Fahrenheit).

Check the distribution rates of both the asphalt distributor and the chipper on a small test strip to be sure you meet the design specifications. Measure the area of the strip and record the level in the distributor before and after spreading.

Check the application rate of the spreader by placing two square yards of roofing paper under the spreader as it moves through the test area. Weigh the chips on the paper, subtract the paper's weight, divide by two, and you have the pounds of aggregate per square yard you have applied. Match both figures to your design, and if they

are within applicable limits, you can start work.

Check the color of the emulsion as it is applied. If it is black, the emulsion has "broken" with the water separating from the asphalt too soon. Stop the project and get new emulsion. The emulsion should be creamy dark brown in color before "breaking".

The application should be watched carefully because misaligned spray bars can cause streaking. This means some areas are getting too much asphalt (resulting in bleeding) and some not enough (resulting in loss of aggregate). If this happens, stop the project and have the spray bars recalibrated. If the pads on the roller are worn or missing, the tires will pick up the aggregate. If you see this happening, stop the project and have the pads replaced. Be sure to check the tire pressure on rubber-tired rollers because uneven pressures produce uneven results.

Now that you've seen that seal coating is a complicated process of many small parts, you can appreciate the need for care in placing seal coats. Although somewhat short of miraculous, a sucessful seal coat can stretch your municipal dollars.

For example, consider the common Alaskan problem of potholes. The City of Boulder, Colorado, initiated a progressive and timely chip seal program in 1983. Since 1983, they report a reduction of 97 percent in the number of potholes on those streets where chip seals have been placed. This has amounted to a reduction of $31,000 in pothole repair. They further estimate that major repair costs of over $5 million dollars on the low volume streets could be avoided during the life of the streets through a progressive chip seal program. Boulder has established an 8 year chip seal cycle on all low volume residential and collector streets. They are convinced that timely maintenance is four to five times less expensive than major repair and rehabilitation costs which would occur if maintenance were deferred and streets were allowed to deteriorate.

Tips For A Successful Seal Coat

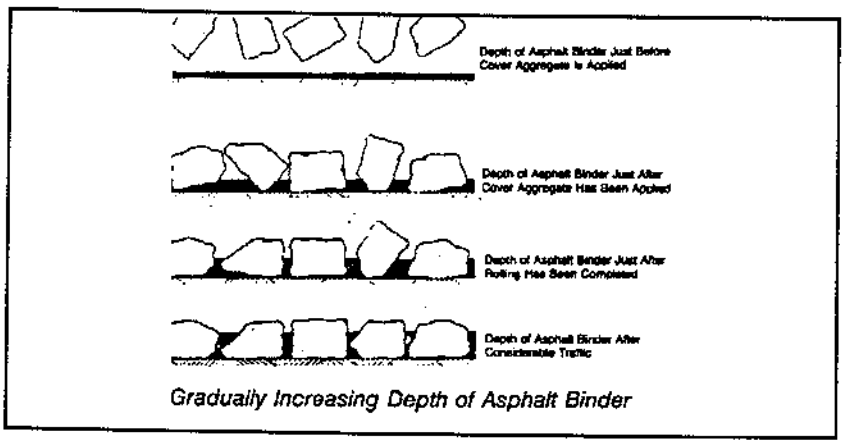
Rubber-tired rollers should be used. The tires on this type of equipment will follow the contours of the road whereas steel-wheeled rollers tend to crush the aggregates. This can cause the aggregate to pop out of the emulsion and also may create more uneven results.

Aggregate loss is a major problem in Alaska. There are seven major causes of such losses: low asphalt content*; dusty aggregate; an incompatible mixture of chips; cool air temperatures; rain immediately before, during, or after construction; a weak base; and use of unsound aggregate.

Sweeping the area is done only after the emulsion has broken. Check the emulsion by scraping the chips from a small area and inspecting the asphalt. If it is a brown color, wait. If it is black, the emulsion has broken and the sweeping may be started. To prevent loss of adhered aggregate, it is good practice to wait as long as possible before sweeping. Through the next week, check the surface and remove any remaining loose aggregate.

Try to keep traffic off the new seal coat for as long as possible. Restricting traffic for twenty-four hours will assure a greater chance of success.

This article was adapted from the Pennsylvania Local Roads Program newsletter, Information Sheet #16, The Wheel, Colorado Transportation Information Center, Performance of Bituminous Surface Treatments in Alaska" by Billy Conner, Alaska DOT&PF.



Gradually Increasing Depth of Asphalt Binder

* The final depth of the asphalt binder should be between 50% and 70% of the height of the aggregate while remembering that emulsions are approximately 40% water.

For More Information

For back issues of our newsletters and notes, or to get on our mailing list, write: Publications, Transportation Technology Transfer Program, University of Alaska Fairbanks, Fairbanks, AK 99775-1760. For more information, you can also call (907) 474-7733.

The Use and Abuse of Computers

Number 5, 1989

Computers, particularly personal computers, are the "power tools" of modern engineering. To many of us, as we approach the last decade of this century, computers are as much a part of our work as paper and pencils. Unfortunately, the trust - or faith - in the ability of computers to solve problems has sometimes become excessive. We have forgotten that the misuse of a tool, particularly a power tool, can create new problems.

Patterns of Abuse

The engineer decides when and how he will use a computer in problem solving. He or she must be intimately aware of how to use that tool, how the computer interprets uses and displays the information. While a tool can increase the precision and speed of one's work, it is not necessarily more accurate.

There are three major characteristics of computers and computer programs that make them prone to abuse.

* Computers can multiply errors just as fast as they can make correct solutions.
* Computers hide the problem solving process and make checking of assumptions and equations difficult.
* Computers cannot decide whether the input given to them is correct or appropriate.

A Case in Point

The phrase "Garbage In/Garbage Out" is commonly used to mean that the information obtained as output from a computer is no better than the input provided by the user. The greater the complexity of the software, the greater the potential for "Garbage In/Garbage Out" to occur and not be recognized. In view of this problem, here are some comments on the software available for the 1985 Highway Capacity Manual.

There are two reasons to do a highway capacity analysis: to explain a traffic situation to another traffic engineer or to explain a traffic situation to lay people, usually a city or borough commission. The analysis is based on the Highway Capacity Manual (HCM), which in 1950 was a short publication with a simple theory based on practical capacity and the possible capacity of a highway. The 1965 edition introduced the concept of "Level of Service." The traffic engineers had just about educated the general public about highway capacity, as spelled out in the 1965 version, when the new 1985 HCM was published.

Because of the complex calculations involved in the 1985 HCM, the Federal Highway Administration sponsored development of the Highway Capacity Software (HCS). The signalized intersection calculations contained in the 1985 HCM are complex, to say the least. The capacity calculations, done by hand, require six worksheets and several hours, assuming no errors are made. Contrast this to using the HCS, which is a user-friendly package that is easy to teach to other users. However, teaching a traffic engineer to use the software is one thing; explaining it to a lay person is another.

Remember the two main reasons for doing a highway capacity analysis? Both are "explanations." But what we've got are complications! The theories and program codes have become so complex that there is no simple, straightforward way to explain the program results to a lay person. Lay people on the city or borough commission will have to trust their staffs when the staff report says that the level of service is or is not adequate.

In fact, few traffic engineers really understand all the theory behind these calculations. The HCM software user, analyzing a signalized intersection, should have a basic understanding of capacity and traffic flow. He or she can not just input data, collect the output, and expect a consistently logical result. The person reviewing the output must be able to spot whether or not the results make sense from a traffic engineering point of view.

The real basis of our discussion of computer abuses is the way in which people make use of the machines. Once a user has accepted a computer program, even if it's complex like the HCS, he or she is responsible for the quality of the results. Consequently, as with any power tool, the user must be:

* skilled in doing the work by hand,
* trained in the proper operation of the tool,
* familiar with the safety features to assure proper use of the tool, and
* experienced in measuring the product against a standard.

How do we control the use of computers? How do we improve work quality without stifling creativity? We recommend a five part corrective program for abusers which focuses on the causes of abuse.

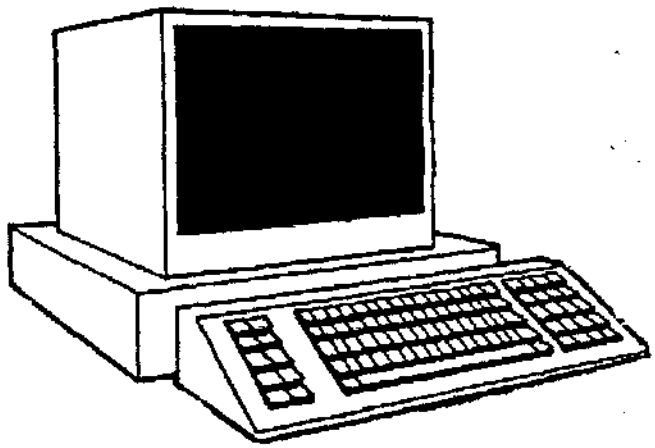
* Establish program development standards that describe good procedures for specifying, coding, documenting and verifying computer programs.
* Develop guidelines for assuring accurate, suitable input.
* Try to use common off-the-shelf programs which reduce the hidden aspects of the programs.
* Verify computer results and compare with other forms of quality control checking.
* Make your staff aware that computer abuse can lead to poor decisions.

A power tool is only as good as the person who uses it. In the hands of the uninformed and inexperienced, a tool is a hazard. But in the hands of a craftsman, who is aware of its capabilities and limitations, even a chain saw can be a sculptor's tool.

Adapted from "Use and Abuse of Computers," the Bridge, Michigan Technological University, Spring 1989 and "Garbage In/Garbage Out," PC-Transmission, University of Kansas, October 1988.

The following software is now available at our T2 Center. If you would like to borrow a copy, please contact Susan Earp at (907)474-7733. If you know of any transportation software programs available that would be of use to you, please feel free to contact the T2 center with your suggestions.

* Arterial Signal Timing Optimization using Passer II-87, Research Report 467-1
* Soap 84 Data Input Manager, January 1985, FHWA-IP-85-8
* Passer III-88, Texas Transportation Institute, September 1988



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UMTA RTAP. What's that?!? Well, it's the acronym for Urban Mass Transit Authority Rural Transit Assistance Program (a real mouthful), and I'm Sharon McLeod Everette, the new UMTA RTAP Coordinator for the Department of Transportation and Public Facilities (DOT&PF) Statewide Research Section (another real mouthful!). My phone number is (907)474-2475. This is the new section of the Technology for Alaskan Transportation newsletter that will concentrate on transit related research, training and technical assistance.

Speaking about "Mass" and "Rural" transit in the same breath sounds like a delicious contradiction, but they are part of the same federal package. The UMTA program was established under Section 18(h) of the Urban Mass Transportation Act of 1964, as amended, and beginning in fiscal year 1987 it authorized $5 million annually to carry out a nationwide program of transit research, training, technical assistance and related support services to assist transit operators in nonurbanized areas. The UMTA RTAP program has a statewide emphasis on Alaska and will address transit operators in towns and villages with a minimal road system as well as larger towns that have a fairly complex road system and are connected by roads.

The Technology Transfer Program (T2) is the mechanism we are using for communication with rural transit operators and for delivering training and information. Let me take this opportunity to introduce Susan Earp; she is the T2 person at the University of Alaska Fairbanks working directly with the UMTA RTAP program, and she can be reached by calling (907)474-7733. You'll be calling her to order videos and publications from the T2 library.

As this program is just getting off the ground, we've not yet made contacts with transit operators around the state. An UMTA library is in the early development sages and will carry videotapes and publications for loan (copying will also be available for a minimal charge) to transit operators and managers. Topics will include mandatory drug testing, equipment maintenance, mass transportation for the elderly and handicapped, passenger assistance, driver training, safety, accounting procedures, etc. We welcome any special requests from transit operators. You can help us determine what to order that will be the most beneficial to you.

We need to know what equipment and transit systems already exist in Alaska. DOT&PF Grant Coordinators of Fairbanks, Juneau and Anchorage have been very helpful buy providing names and addresses of those to whom grants have been issued. More research to develop a database of existing transit equipment and systems will be occurring over the next 6 to 9 months.

In addition, technical assistance is something the program will concentrate on. We hope to establish a peer to peer networking system within the state, and with other managers in the rest of the United States. Training in most, if not all of the areas listed in the library, will also be occurring.

If you have any questions, any suggestions to offer, or are just plain curious, please give me a call at (907)474-2475.

Sharon Mcleod Everette, SR/WA
UMTA RTAP Coordinator
DOT&PF Statewide Research
2301 Peger Road
Fairbanks, Alaska 99709

For More Information

For back issues of our UMTA RTAP notes, or to get on our mailing list, write: Publications, Transportation Technology Transfer Program, University of Alaska Fairbanks, 233 Duckering Building, Fairbanks, Alaska 99775-0660. For further information contact (907) 474-2475.

NEW PUBLICATIONS AVAILABLE FOR LOAN

Number 16, 1989

June 1989
Last=448

____ **1986-1987 Biennial Report of FHWA Research, Development and Technology Transfer**, ID-448, U.S. DOT, 70pp.

___ **Bridge Management Under a Level of Service Concept Providing Optimum Improvement Action, Time and Budget Prediction,** ID-445, Department of Civil Engineering, NCSU at Raleigh, 383pp.

____ **Catalog of Educational Causes, Cement of Concrete Industrial,** ID-438, Portland Cement Association, 1988-89, 17pp.

____ **Catalog of Research Studies and Reports,** ID-423, Texas Cooperative Highway Research Program, January 1989, 242pp.

____ **City Streets, The Concrete Advantage,** ID-439, Portland Cement Association, 4pp.

____ **Compare Concrete and Asphalt,** ID-440, PCA, 4pp.

____ **Concrete Report**, ID-428, Portland Cement Association.

____ **Condition and Corrosion Survey on Corrugated Steel Storm Sever and Culvert Pipe**, ID-443, September 1988, 76pp.

____ **Construction Technology Laboratories, Inc., Catalog of Professional Services**, ID-429, 15pp.

____ **Construction:Quality Control and Specifications**, ID-447, National Research Council, 59pp.

____ **Durability of Concrete Bridge Decks,** ID-432, A Cooperative Study, 1970, 35pp.

____ **Evaluation of Concrete Pavements with Tied Shoulders or Widened Lanes**, ID-442, PCA, 9pp.

____ **Evaluation of the Automatic Road Analyzer ARAN for Measuring Roughness and Rut Depth**, ID-416, FHWA, May 1988, 52pp.

____ **Evaluation of the Laser Road Surface Tester for Measuring Pavement Roughness and Rut Depth**, ID-417, FHWA, May 1988, 60pp.

____ **Export Transportation and Intergovernmental Public Policy,** ID-418, U.S. DOT, February 1985, 175pp.

____ **Guide to Concrete Resurfacing Designs and Selection Criteria,** ID-436, Portland Cement Association, 1981, 18pp.

____ **Guide to Successful Street Paving,** ID-429, Portland Cement Association.

____ **Innovative Funding For Intercity Modes, A casebook of state, local, and private approaches**, ID-419, U.S. DOT, July 1987, 83pp.

____ **Level of Service Analysis for Bridge Maintenance Activities in North Carolina**, ID-446, Department of Civil Engineering, NCSU at Raleigh, 130pp.

____ **Operating Strategies for Major Radial Bus Routes**, ID-422, U.S. DOT, May 1984, 337pp.

____ **Parking and Storage Area of Soil-Cement**, ID-441, PCA, 9pp.

____ **Pavement Design and Rehabilitation,** ID-437, December 1988, 287pp.

____ **PCA Soil Primer**, ID-433, Portland Cement Association, 1973, 39pp.

____ **PCA.1988-89 Catalog,** ID-411, Publications, Computer Programs, and Audiovisual Materials, Portland Cement Association, 44pp.

____ **Planning Techniques For Intercity Transportation Services,** ID-420, U.S. DOT, July 1987, 111pp.

____ **Policy on Geometric Design of Highways and Streets,** ID-415, American Association of State Highway and Transportation, 1984, 1090pp.

____ **Public Road, Journal of Highway Research and Development,** ID-212F, Vol. 52, No. 3, FHWA, December 1988

____ **Rational Method for Upgrading Towed Vessel Safety, University Research Program, University Research Results,** ID-424, U.S. DOT, May 1986, 160pp.

____ **Simplifying Human Service Transportation and Small Transit System Accounting, An Eight State Perspective,** ID-421, U.S. DOT, April 1986, 101pp.

____ **Software and Source Book,** ID-408, Revised June 1987, U.S. DOT/UMTA & FHWA Technical Assistance Program. Microcomputers in transportation, 222pp.

____ **Soil Cement Construction Handbook,** ID-435, Portland Cement Association, 1981, 18pp.

____ **Soil Cement Inspector's Manual,** ID-409, Portland Cement Association, 1984, 64pp.

____ **Soil Cement Laboratory Handbook,** ID-434, Portland Cement Association, 1971, 64pp.

____ **Standard Specifications for Structural Supports for Highway Signs, Luminaries and Traffic Signals,** ID-414, American Association of State Highway and Transportation Officials, 1985, 69pp.

____ **Street and Road Management Systems,** ID-426, Bernardin, Lockmueller and Associates, 11pp.

____ **Thickness Design for Concrete Highway and Street Pavements,** ID-410, Portland Cement Association, 1984, 46pp.

____ **Thickness Design for Soil Cement Pavements,** ID-431, Portland Cement Association, 14pp.

____ **Transportation Institutional Bottlenecks and Barriers to U.S. Exports,** ID-425, U.S. DOT, February 1984, 157pp.

____ **Urban Transportation Abstracts,** ID-412, Volume 6, Number 1, Summer 1987, Urban Mass Transportation, U.S. Department of Transportation, 227pp.

____ **Usage Pricing for Public Marine Terminal Facilities,** ID-427, Volume II Usage guide, U.S. DOT, December 1981, 40pp.

____ **Working Women and the Aging:Impact on Travel Patterns and Transportation Systems,** ID-444, Transportation Research Board, 1987, 41pp.

These publications may be borrowed for two weeks. If you wish to receive a copy of any of the above publications to keep, contact the Alaskan Technology Transfer Program at 474-7733 to see if it can be obtained or if duplication is possible. Please print your name and address below, and mail to:

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University of Alaska Fairbanks
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NEW VIDEOS AVAILABLE FOR LOAN

Number 17, 1989

May 1989
LAST=97

____ **Base and Subbase Repair**, ID-3, FHWA/IRF, 16min.

____ **Bituminous Seal Coats**, ID-7, Washington State DOT, 16min. Tape presents in clear terms the materials, equipment, traffic control and work methods for bituminous seal coats.

____ **Blading Unpaved Roads,** ID-8, FHWA/MACE, 4/88, 22min. For the motorgrader operator, this tape demonstrates the basics of maintaining unpaved roads, complementing the NACE book on blading.

____ **Common Maintenance Problems and Causes**, ID-85, FHWA/IRF, 20min.

____ **Crack Repair in Asphalt Pavement**, ID-86, FHWA/IRF, 11min.

____ **Crack Sealer Operation**, 2 Parts, ID-13, Utah DOT, 30min. Part one introduces crack sealing and the crack sealer to the operator, and part two covers operation and daily maintenance.

____ **Crack Sealer/Tar Pot PM-A**, ID-14, Utah DOT, 11min. This tape discusses periodic preventative maintenance procedures for crack sealers and tar pots.

____ **Custodial Asbestos Awareness and Glove Bag Removal**, ID-92, Selectron Productions, 10 min.

____ **Emergency Relief**, ID-95, FHWA, 17 min. Covers the Emergency Relief program for Federal-aid highways.

____ **Idea Store:Edition I**, ID-94, Pennsylvania RTAP, 8 min. Pennsylvania through FHWA is looking for innovative ideas discovered by municipal workers to create ten videos for RTAP centers use.

____ **Idea Store:Edition II,** ID-96, Pennsylvania RTAP, 13 min. A continuation of the FHWA project in conjunction with the Pennsylvania DOT, featuring ideas on Easy Blade Changing for a Motor Grader, Tips on Work Zone Traffic Control, Evaluating Aggregate Loss, Winter Service and Junk Day Brochures, Idea Booklet and the Better Beaver Baffler.

____ **Maintaining Asbestos Covered Pipes and Surfaces,** ID-91, Source Finders Information Corporation, 50 min.

____ **Maintaining Gravel Roads in Arkansas,** ID-97, Arkansas Center for Technology Transfer, Geared toward Foreman, Motor Grader Operators and anyone that works with maintaining gravel roads, 23min.

____ **Patching Unpaved Roads,** ID-46, FHWA, 11min.

____ **Patching with Hand Tools,** ID-47, Utah DOT, 12min. This video illustrates the correct procedures for patching asphalt pavements with hand tools.

____ **Pavement Maintenance (Part 4) - Patching and Crack Filling,** ID-51, Montana State University/The Asphalt Institute, 55min. Lecture tape discusses various types of patching and the repair of cracks, potholes, and other pavement surface distresses. Concentrates mainly on asphalt concrete pavements.

____ **Pavement Maintenance (Part 6) - Seal Coats,** ID-53, Montana State University/The Asphalt Institute, 55min. Lecture tape which covers the various types of seal coats, including slurry and sand seals, and the objectives behind their use.

____ **Pothole Repair in Asphalt Concrete Pavement**, ID-57, FHWA/IRF, 13min.

____ **Pothole Repair in Surface Treatment Pavement**, ID-58, FHWA/IRF, 13min.

____ **Potholes:Causes, Cures and Preventions,** ID-59, CRREL, 17min. Presents the basic causes, cures, and prevention of potholes. Repair procedures are defined including 12 steps for resolving the pothole problem.

____ **Repair of Depressions, Rutting and Corrugations,** ID-87, FHWA/IRF, 15min.

____ **Reshaping Earth and Gravel Shoulders,** ID-62, FHWA/IRF, 15min.

____ **Sealing Cracks,** ID-83, UTAH DOT, 8min.

____ **Smoothing and Reshaping of Earth and Gravel Roads,** ID-66, FHWA/IRF, 1985, 21min. This tape covers the equipment needed and procedures to follow when smoothing or reshaping gravel roads with a grader.

____ **Stabilization:Holding the Road,** ID-69, Iowa State University, 22min. This tape looks at an alternative to paving unpaved roads for dust control. It shows the steps to take in analyzing the old surface and discusses the various binders or additives which are available.

____ **Upgrading Gravel Roads,** ID-79, Montana State University RTAP, 20min. 2 parts - The first part explains the importance of gravel roads in rural areas, and highlights problems such as poor materials, narrow right-of-way, decreasing budgets, and lack of equipment. The second part of the tape shows how MT/DOT used a near-site plant mixer to add asphalt and water to sand and gravel in order to create a good base.

____ **Uses of Asphalt-Rubber,** ID-93, Asphalt Rubber Producers Group, 12 min.

These videos may be borrowed for two weeks. If you wish to receive a copy of any of the above videos contact the Alaska Transportation Technology Transfer Program at 474-7733 to see if it can be obtained or if duplication is possible. Please print your name and address below, and mail to:

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